RADIOCARBON DATES FOR THREE SITES AT STATION BAY, MOTUTAPU ISLAND

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Abstract. Four radiocarbon dates are reported and their significance discussed. Results on bone collagen and on charcoal are compared.

Four additional radiocarbon results for three excavated sites at Station Bay, Motutapu Island, have been received from the Institute of Nuclear Sciences, Gracefield. Three samples were human bone collagen and the fourth was charcoal. The human bone was dated as part of a wider programme carried out by Dr P. Houghton, Otago Medical School, to investigate age assessment by determination of nitrogen content. The significance of the results for that programme will be described elsewhere. The purpose of this note is to discuss the archaeological significance.

The results are as follows.

NZ 4346 human bone collagen from burial, site N38/37	
$\delta^{13}C$ w.r.t. PDB	— 15.0 ± 0.1‰
percentage modern w.r.t. N.Z. Bone Standard	94.1 ± 0.6%
^{14}C age w.r.t. N.Z. Bone Standard	490 ± 50 yrs. B.P.
^{14}C age calculated according to new half-life and corrected for secular effect	520 ± 60 yrs. B.P.
NZ 4347 human bone collagen from burial, site N38/30	
$\delta^{13}C$ w.r.t. PDB	— 18.2 ± 0.1‰
percentage modern w.r.t. N.Z. Bone Standard	92.8 ± 0.5%
^{14}C age w.r.t. N.Z. Bone Standard	600 ± 50 yrs. B.P.
^{14}C age calculated according to new half-life and corrected for secular effect	630 ± 40 yrs. B.P.
NZ 4348 human bone collagen from burial, site N38/25	
$\delta^{13}C$ w.r.t. PDB	— 25.0 ± 0.1‰
percentage modern w.r.t. N.Z. Bone Standard	95.1 ± 0.7%
^{14}C age w.r.t. N.Z. Bone Standard	410 ± 60 yrs. B.P.
^{14}C age calculated according to new half-life and corrected for secular effect	450 ± 30 yrs. B.P.
NZ 4349 charred bracken fronds from pit fill, N38/25	
$\delta^{13}C$ w.r.t. PDB	— 23.6 ± 0.1‰
percentage modern w.r.t. O.95 N.B.S. Ox. Ac. Std.	99.6 ± 0.9%
^{14}C age w.r.t. N.B.S. Ox. Ac. Std.	modern (<200 yrs. B.P.)

The excavations at the two undefended ridge sites, N38/37 and N38/30, have been described in detail (Allo 1970, Davidson 1970, 1972, Leahy 1970, 1972). A preliminary account of the excavations at the headland pa, N38/25, is available (Davidson 1972), and the same paper reports the results of radiocarbon dates obtained for N38/37, the only one of the three sites previously dated.

On the summit area of the pa, N38/25, two adjacent pits were found, both apparently dug from the same surface and subsequently refilled to provide the final

flat surface during the last occupation of the site. The double burial which provided the collagen sample NZ 4348 was on the floor of the larger pit; the charcoal sample NZ 4349 came from bracken fronds which had burnt in the base of the smaller pit immediately before it was deliberately refilled. There is some indication that the smaller pit was filled first. Either the two samples are contemporary or the bracken could be slightly older, although not significantly older in radiocarbon terms. There is no possibility that the burial could be significantly older than the burning of the bracken in the adjacent pit.

Samples previously dated from N38/37, which were all charcoal, included three from beneath the Rangitoto ash, and two which were thought to date cultural activity on the site (Davidson 1972: 5-6). Of the latter, sample NZ 1168, with a result of 185 ± 71 B.P. was considered most consistent with the expected age of the site on cultural criteria.

The dating of the Rangitoto ash layer is most important in any consideration of the cultural sequence on Motutapu. In a review of the various carbon dates for this event, Law (1975) suggests that a fourteenth or early fifteenth century date is most likely. This has to be kept in mind in assessing the date for N38/30, a site which is certainly later than the Rangitoto ash.

It appears that the human bone collagen results may be consistently too old. At both N38/37 and N38/25, a human bone collagen date is considerably older than a charcoal date, and cultural considerations tend to suggest that the charcoal dates are more acceptable. There is no other date for N38/30, but the probable age of the Rangitoto ash, and the content of the site, suggest that this result, also, may be too old. On the other hand, the three bone dates appear to give an acceptable indication of the *relative* ages of the three sites. An age difference between N38/30 and N38/37 has previously been suggested on archaeological grounds, and was also indicated by the nitrogen content of the burials from the two sites (Houghton 1977: 40). It is likely, therefore, that N38/30 is the oldest of the three sites, and that N38/25 (in its final phase, at least) and N38/37 are younger and too close together in time to be distinguished by radiocarbon dates.

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